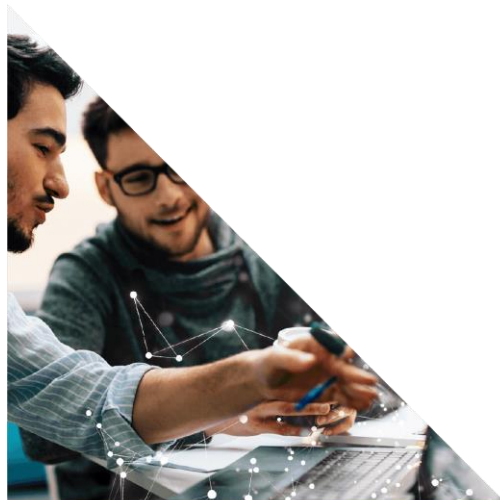


Unique Opportunities for Smart Transportation in Greater Montréal



The world's best economic promotion agency at your service





Content



01

A Booming Smart
Transportation Hub

02

All the Building Blocks for
the Future of Mobility

03

Strategic Access to
Markets

04

A Deep and Growing Pool
of Highly Qualified Talent

05

Attractive Operating Costs
and Incentives

06

Montréal International's
Personalized, Free and
Confidential Services

10+1 Reasons to Invest in Electric and Smart Transportation in Greater Montréal

1 Specialized ecosystem

- Ground transportation expertise
- Vehicle electrification value chain
- A world-class hub in Artificial Intelligence

4 Proactive city

- Smart Cities Challenge 2019 Winner
- Montreal Urban Innovation Lab
- Intelligent Transportation Institute

7 Leading talent pool

- 64,000 engineers
- 34,000 engineering students
- Research chairs in transportation electrification
- Bilingual population

10 Intermodal platform

- International airports
- The second-largest container port in Canada
- A railway network that extends all the way to Mexico

2 Affordable and clean electricity

- One of the world's largest producers of hydropower
- 99%+ electricity from renewable sources
- The lowest electricity rates among major North American cities

5 World-class research centres

- IREQ, Hydro-Québec's research institute: 800 patents and 40 licences
- Leading artificial intelligence research
- Internationally renowned researchers

8 Competitive costs and incentives

- Cost advantage over other North American cities
- Generous R&D tax credits
- Financial support

3 Québec's electrification strategy

- Objective of 1.5 million electric vehicles in Quebec by 2030
- Budget of \$3.8B over 5 years to electrify the transportation sector

6 Testing areas and conditions

- Favourable climate
- Presence of a test centre for Canadian and U.S. standards
- Semi-controlled and real-world testing areas
- Temporary imports of non-certified vehicles

9 Market access

- Direct access to 1.5B consumers due to CUSMA, CETA, CPTPP and 12 other trade agreements in force



**Montréal International's
strategic support**

01

A Booming Smart Transportation Hub



Montréal
International



Québec's Smart transportation ecosystem at a glance



A strong transportation manufacturing industry



32,000
jobs



620
companies

A wide range of manufacturing, design and assembly activities for transportation equipment and vehicles

Québec has a well-developed expertise in **specialized vehicles:**

- Buses, motor coaches;
- Trucks, Garbage trucks;
- Armoured cars, ambulances, police cars;
- Motorcycles, snowmobiles, three-wheeled sports vehicles.

A strengthened customer base made up of industry giants

NOVABUS

BOMBARDIER

PACCAR

PREVOST

VOLVO





Greater Montréal, a smart and digital city

- **Smart Cities Challenge 2019 winner** for its proposal to improve mobility with a prize of \$50M
- **2019 Electromobile City Winner from Canada Electric Mobility**
- **Ranked #1 for Intelligent Communities over 1M population**
 - Intelligent Community Forum (2018)
- Presence of the **Smart and Digital City Office** and **the Institute of Intelligent Transportation**
- **\$400 M** invested into Canada's **5G public-private ENCQR project Network** to enable better-sustained connection and communication between technologies
- **Many ambitious Intelligent Transportation System** projects: Urban Mobility Management Center, Smart Parking Project, Geo-Traffic Dynamic Database

World-class research centres

Recognized for its expertise in batteries and R&D for specialized electric vehicles.



Institut de recherche

- **Hydro-Québec's research institute, IREQ** is recognized for its **expertise in batteries**
- Close to 30 research groups and research centres
- **800 patents and 40 licences** held by IREQ, Hydro-Québec's research institute
- Yearly average of \$100 M in its innovation projects
- 500 specialists pool their efforts and expertise to support Hydro-Québec in every facet of its operations, from electricity generation to consumption



**National Research
Council of Canada**



**Electrical energy
innovation**



**Interuniversity Research
Centre on Enterprise
Networks, Logistics
and Transportation**



Institut du véhicule innovant
Innovative Vehicle Institute

**Innovative Vehicle
Institute**



**CTA – Advanced
Technology Centre BRP –
Sherbrooke University**

Collaborative clusters to support companies and investors



Electric and smart vehicles



Transport and logistics



Clean technologies



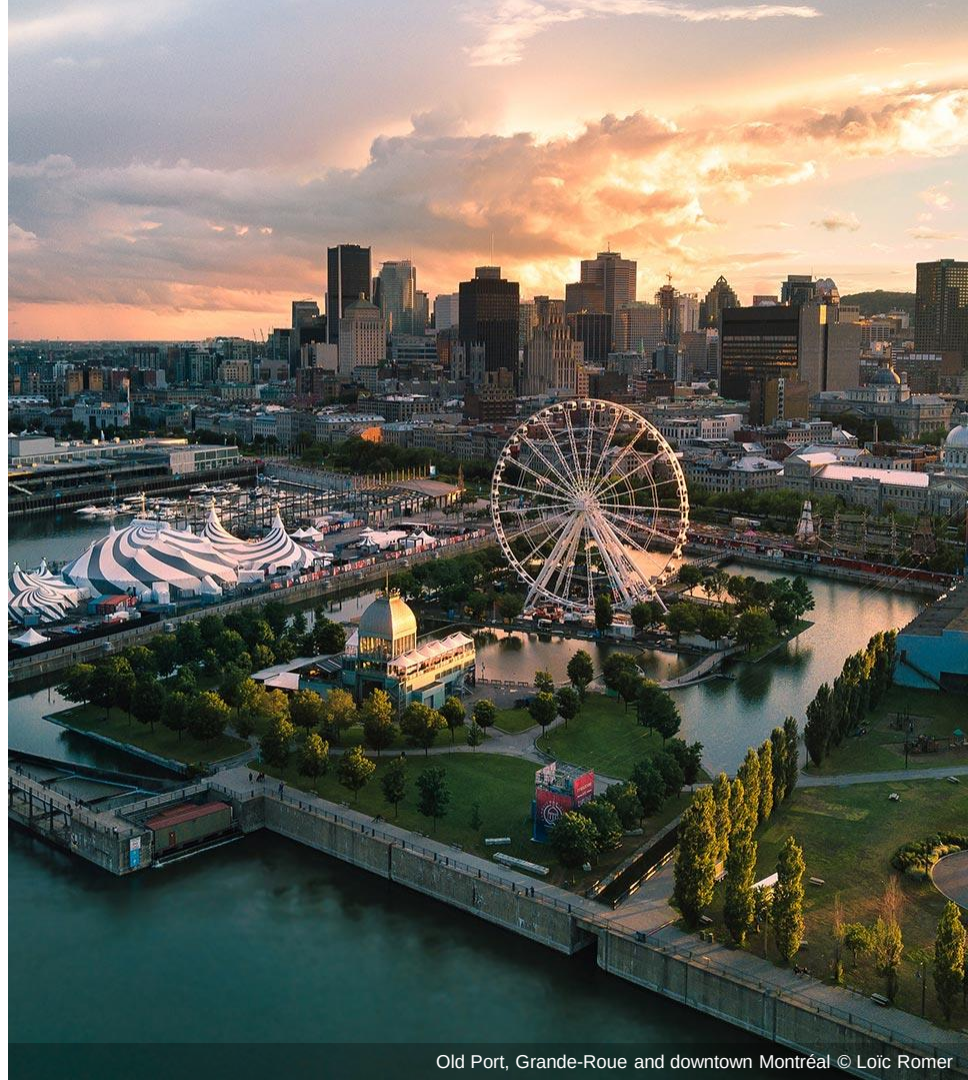
Information and communications technologies



Artificial Intelligence



AI-Powered Supply Chains



Established local and global players thriving in Greater Montréal



Johnson Matthey

Production of lithium iron phosphate (LiFePO₄) for Lithium-Ion batteries to meet North American demand



Blue Solutions

A company that develops and produces batteries in the electricity storage and transportation sectors



Danad TM4

A company designing **motors and power converters**



AddÉnergie

1st in Canada and 2nd in North America in **charging solutions** for electric vehicles. It will provide New York City with charging stations for electric vehicles



Varitron

One of the top five electronic manufacturing services companies in Canada



Verbom

A leading **manufacturer of sheet metal parts** for the transportation industry



ABB

A company specializing in **energy and automation technologies** and opening a North American centre of excellence for transportation infrastructure in Montréal



Lion Bus

A Québec-based OEM that caters to the needs of the North American school bus industry

A culture of partnerships and commitment



Dana Incorporated and Hydro-Québec announced a strategic joint-venture in which TM4 Inc., a subsidiary of Hydro-Québec, will become Dana's source for electric motors, power inverters, and control systems. (2018)



Michelin acquires Camso and strengthens its position in the manufacture of specialty tires and tracks for off-road vehicles (2018)



Kéolis launches the first **NAVYA** autonomous shuttle on the roads of Québec (2018)



PSA (FreetoMove) invests in Communauto to eventually provide car-sharing vehicles, thus preparing for its eventual return to the North American market (2016)



Daimler and Blue Solutions a subsidiary of Bolloré, enter into an agreement to equip Daimler's E-Citaro buses with Lithium Metal Polymer (LMP®) batteries from Blue Solutions, exclusive supplier of full solid batteries for electric buses (2018)



Mobilizing project between Lion Bus, TM4, AddÉnergie Technologies, Adetel Solution and Alcoa Canada from electric heavy-duty vehicles prototypes (2016) to launching of All-Electric Class 8 Urban Truck (2019)

A favorable political context for the industry

Québec



■ 2030 Plan for a Green Economy

■ Electrification of transport

- Support of + \$ 1.5 billion for the electrification of light vehicles
- Up to \$8,000 discount on the purchase of an electric vehicle
- Subsidy of \$12,000 per charging station for municipalities
- Financial assistance, training and support for organizations that want to electrify their transport
- Increased requirements for zero emission vehicles (ZEV)

■ Electrical industry

- Development of the battery sector: development of critical minerals, production electric vehicles and development of recycling capabilities
- Financial assistance to encourage the development of technological innovations in the electrification of transport

Montréal



■ Climate Plan 2020–2030

- Achieve 50% of the registered car fleet in Montreal to be electric
- Reach 30% of passenger travel to be carried in electric vehicles
- Carry out 25% of deliveries without greenhouse gas emissions
- Institute of Electrification and Intelligent Transportation
- Achieve carbon neutrality by 2050

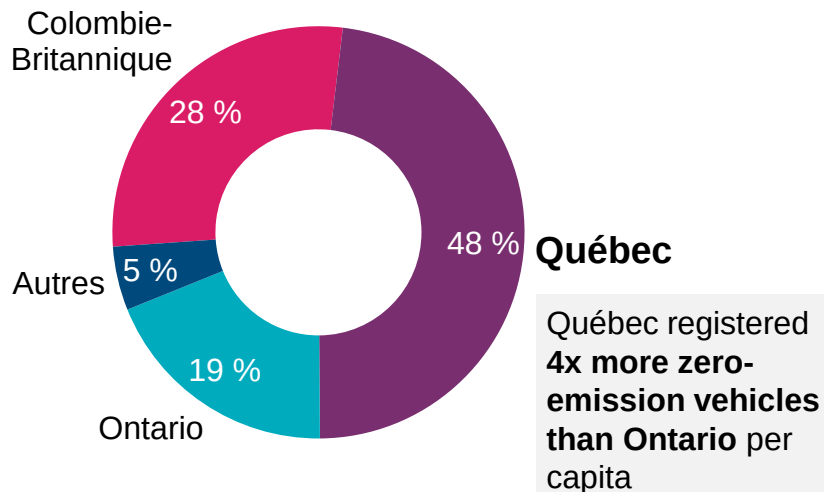
Québec government's 2030 Plan for a Green Economy

Targets for 2030

- Reach **1.5 million EVs in Quebec by 2030**, or around 30% of the vehicle fleet
- Achieve a **40% rate of electric taxis**
- Attain a **65% rate of electric school buses**
- Achieve an electrification rate of **100% for government vehicles** and **25% of government vans**
- Install **2,500 fast charging stations** and **4,500 standard stations**
- Reduce greenhouse gas emissions by **37.5% below 1990 levels**

Québec is No. 1 in vehicle electrification in Canada

Registration of zero-emission vehicles* in Canada, 2020



*Note: Zero-emission vehicles are battery electric vehicles or plug-in hybrid electric vehicles that have the potential to produce no tailpipe emissions.
Source: Statistics Canada, 2021.



The transportation sector is supported by a strong IT industry

- **179,000+ IT professionals** and **5,000+ companies** in Greater Montréal
- **A GDP of \$11.6B**
- **Lowest operating costs in North America** for software development
- **Broadly diversified industry:**



5th

highest tech jobs concentration
among the largest metropolitan areas in Canada & U.S.



1st

city in Canada
and a world leader in digital creativity



5th

video game development hub
in the world

Sample of major IT and transportation companies located in Greater Montréal



AI as a driver for the transportation industry

- **\$3+ billion in AI investments** in Greater Montréal since 2016
- The Canadian government chose Montréal as headquarters for **Scale AI**, Canada's AI supply chain supercluster
- A community of more than 600 researchers and graduate students at Mila - the world's largest academic research lab in deep learning and reinforcement learning.
- Sample of major players located in Greater Montréal:



Made-in-Québec electric vehicles



BOMBARDIER RECREATIONAL PRODUCTS (BRP)

A fully electric Spyder with a 170-km range. 70% of BRP recreational products are exported to the U.S.

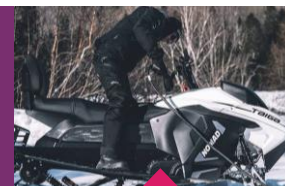


POSI



MOVERA

An iconic shuttle vehicle developed by a consortium for Calgary International Airport.



TAIGA MOTORS

LION BUS

The first OEM to sell a fully electric school bus. Its vehicles are also available in California, Massachusetts and New York.



ALSTOM



KARGO

A vehicle that is 90% aluminium. 30% of all vehicles produced go to mines outside North America.



DOPPLEMAYR



NOVABUS

Volvo is making the most of Greater Montréal's position as the only centre of expertise in transportation electrification in North America.



PACCAR



MOTREC



LITO GREEN MOTION

A culture of innovative, sustainable urban mobility



Société de transport de Montréal (STM) planning to go fully electric
Ranked 9th in the 2018 **Best 50 Corporate Citizens in Canada**
Goals: **acquire only electric vehicles as of 2025** and **achieve zero emissions for vehicles by 2040**



Réseau Express Métropolitain (REM) is a light rail network under construction in Greater Montréal

67 km, with 26 stations

Initiated by Caisse de dépôt et placement du Québec (CDPQ Infra) for an estimated **investment of \$6.3B**



Communauto, one of the largest companies of its kind in the world, and North America's car-sharing pioneer
3,000 vehicles

A fleet including **hybrid and electric cars**
Serves 13 Canadian cities and Paris in France



BIXI, the bike sharing system that has taken over the world

7,250 bikes and 600 stations in Montréal

Urban mobility and environmental responsibility

A system used in **33 cities around the world**: NYC, London, Chicago, Toronto, Barcelona, Sao Paulo, etc.



02

All the Building Blocks for the Future of Mobility



Clean, renewable, reliable and affordable electricity



No. 1

in North America for electricity rates for large-power customers

Total installed capacity
of **47,222 MW**



Thanks to its green, renewable and stable supply of **low-cost hydropower**, Greater Montréal boasts one of the lowest electricity rates in North America: **CA\$4.04/kwh***

* Rate LG: large power with minimum billing demand of 5,000 kW, transmission and distribution included, for 120-kV supply with 95% load factor, and including the Economic Development Rate reduction (if eligible).



Carillon generating station © Hydro-Québec

- **Stable rates:** Our water resource is a great collective asset, and it helps protect electricity rates from the volatility of oil and gas prices
- Hydro-Québec generates **more than 99%** of its electricity from water, a source of **clean, renewable energy**
- The **quality** and **reliability** of the power grid are also two major advantages

Favourable conditions for vehicle testing



Québec's weather is perfect for testing

- Harsh winter conditions
- Heavy precipitation and wide temperature variations

Organizations
dedicated to
experimenting with new
technologies in the field
or smart and
sustainable transport



- **One of the most modern motor vehicle test centres (MUTC)**
- Transport Canada's only motor vehicle test and research centre; run by PMG Technologies
- The only Canadian motor vehicle test centre and one of the few in North America whose testing conforms with Canadian and U.S. standards (CMVSS and FMVSS)
- Test vehicle preparation lab and crash lab
- 25 km (15.5 mi.) of test tracks and proving grounds
- Environmental chambers for tests at temperatures ranging between -55°C and $+85^{\circ}\text{C}$



PMG Technologies' test tracks

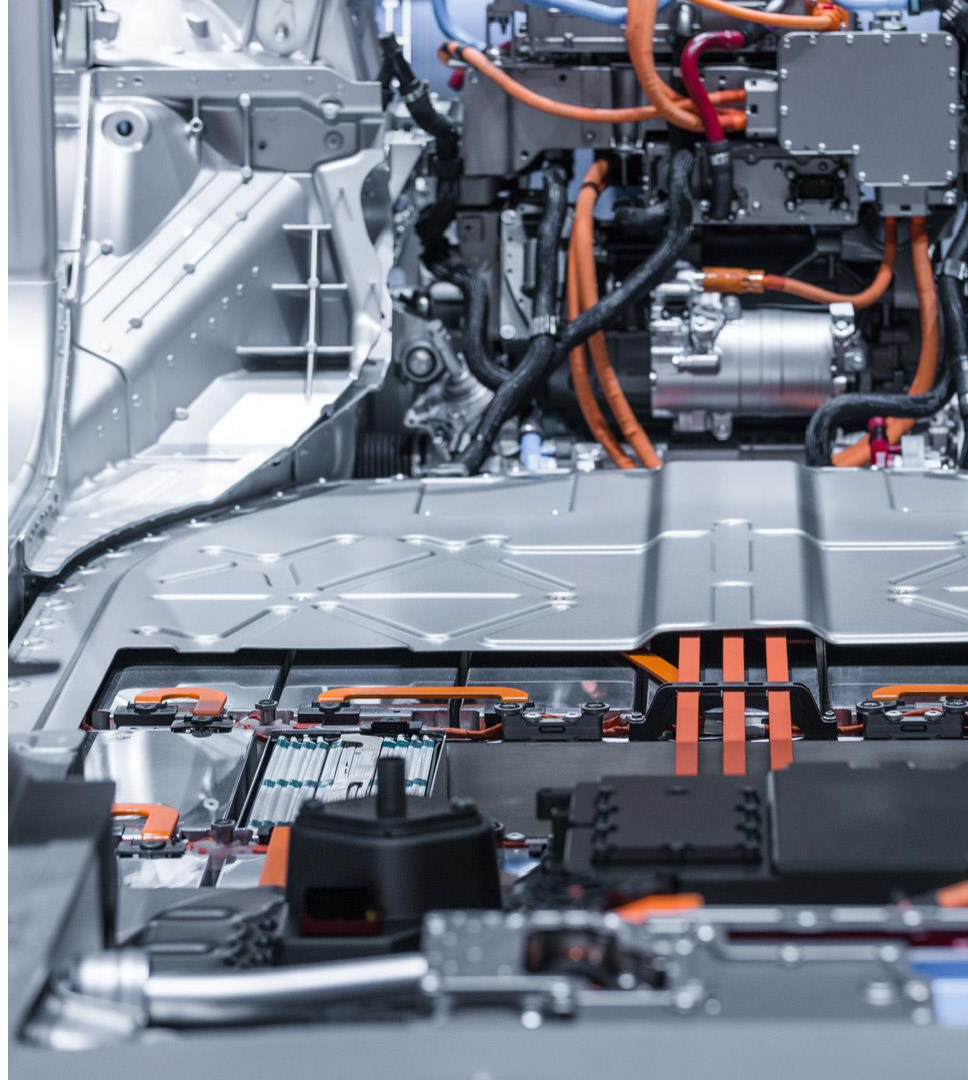
Abundant natural resources needed for battery production

Geological diversity

- Availability of **metals needed** to manufacture batteries and special alloys for lighter vehicles
- **Lithium, graphite, titanium, phosphate, cobalt, niobium and vanadium reserves**
- **The world's 3rd largest lithium deposit** is in Québec

Global aluminum producer

- **Nine aluminum smelters** in Québec, with a production capacity of 2.9 million tonnes
- Canada is the **world's third-largest producer** of primary aluminum, 90% of which is produced in Québec
- The major producers are **Rio Tinto** and **Alcoa**
- **Aluminum processors serving the transportation industry:** Bombardier (metro) ▪ Fabrication Powercast (mold cast parts)
 - Fourgons Transit (truck bodies) ▪ Cambli Group (armoured trucks) ▪ Tremcar (tank trailers) ▪ Remtec (special vehicles/tanks) ▪ Raufoss (formed aluminum products)
 - Equipements Labrie Manac (waste collection equipment)



03

Strategic access to markets





Montréal's Old Port

A gateway to 60% of the world's GDP

Thanks to **CUSMA, CETA, CPTPP**
and 12 other free trade agreements in force*

Direct access to **1.5 billion consumers**
and a **combined GDP** of **US\$50 trillion**
(60% of the world's output of goods and services)

**Only Canada has free trade agreements
with all other G7 countries**

*Canada-United States-Mexico Agreement (CUSMA), Comprehensive Economic and Trade Agreement (CETA) and Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

Source: World Trade Organization, 2020; World Bank, 2019; Census Bureau, 2020..

A fully-fledged logistics and intermodal hub



- **Two international airports:** Montréal–Trudeau and Montréal–Mirabel
- **20.3M passengers** in 2019
- Direct flights from Montréal–Trudeau airport to **more than 150 destinations**, including 119 international destinations



- The **2nd largest port** in Canada and **largest container port** in Eastern Canada
- Main port for Quebec and Ontario shippers
- More than 2,000 ships/year, 2,500 trucks/day and 60–80 trains/week
- Access to 40M consumers in **one day by truck** and 70M consumers in **less than two days by train**



A rail network that extends across Canada and the U.S. all the way to Mexico: over **42,557 km** of track in Canada



Canadian National Railway Company (CN)

Headquarters located in Montréal. Tracks stretching across Canada from the Atlantic to the Pacific coast and following the Mississippi River all the way to the Gulf of Mexico



Canadian Pacific Railway (CP)
22,500 km of track in 6 Canadian provinces and 13 U.S. states



CSX
More than 34,000 km of track in 23 U.S. states, the District of Columbia, Ontario and Québec

04

A Deep and Growing Pool of Highly Qualified Talent



The best student city in the Americas and Canada's university capital

- **Canada's university capital:** 15 university institutions and 60 colleges
- **320,000 post-secondary students**, including more than 200,000 university students and **35,500 international university students**
- **1st in Canada for university research funding** with \$1.34+ billion yearly



**Best student
city in the
Americas**

tied with Boston
QS Best Student
Cities Rankings
2022

1	Montréal tied with Boston
2	Toronto
3	New York
4	Vancouver
5	San Francisco





Canada's most bilingual and trilingual population



2.5 million residents speak English, that's 9% more than in Vancouver



55% of the population is bilingual (French and English), compared to 8% in Toronto and 7% in Vancouver



Almost 20% of the population is fluent in three or more languages, compared to 4% in Toronto and 3% in Vancouver

The engineering advantage

Top-ranked mobility engineering programs



- 1st in Québec for the number of students and the scope of research activities
- 120 programs, 20 Industrial Chairs (including 13 NSERC), 25 Canada Research Chairs and 1 Canada Excellence Research Chair



Le génie pour l'industrie

- 10,700 students, including 2,800 graduate students
- \$27,2M in R&D research funds
- 60% of research activities carried out in partnership with the industry



- Highly ranked electrical engineering and software engineering departments
- A Canada Research Chair in Efficient Electric Vehicles with Hybridized Energy Storage Systems
- World recognized laboratory on Intelligent Vehicles



- A Canada Research Chair in Energy Sources for the Vehicles of the Future



- A new electric vehicle technology program
- A new mechanical program for buses and electric vehicles in collaboration with the Saint-Jérôme Road Transport Training Center



Close to **24,000 students** in engineering programs

9,500+ graduates

Close to **14,000 students** enrolled in post-secondary IT programs

64,000+ members of the Ordre des Ingénieurs du Québec

University research expertise in electric and smart transportation



JOAO PEDRO FERNANDEZ
Université de Sherbrooke



Canada Research Chair in Efficient Electric Vehicles with Hybridized Energy Storage Systems
Efficiency and driving range of electric vehicles by **improving their energy storage capacity**



RENÉ JR. LANDRY
École de Technologie Supérieure



LASSEN (Laboratory of Space Technologies, Embedded Systems, Navigation and Avionic)
Applications in electronics and transportation such as **autonomous vehicles** (UAVs), software-defined radio, robust systems and high-precision navigational and reliable, **secure wireless communication**



LOIC BOULON
Université du Québec à Trois Rivières



Canada Research Chair in Energy Sources for the Vehicles of the Future
Designing **clean, efficient energy sources** for vehicles



YOU MIN ZHANG
Concordia University



Networked Autonomous Vehicles (NAV) Lab
Advanced technologies for autonomous vehicles (FDD System, System FTC, Sense & Avoid)



MIGUEL ANJOS
Polytechnique Montréal



Canada Research Chair in Discrete Nonlinear Optimization in Engineering
Optimization methods that make the best use of **renewable energy sources and assure the smooth operation** of the smart electricity grid



BENOÎT BOULET
McGill University



Industrial Automation Lab, Centre for Intelligent Machines
Design and control of **electric vehicle drivetrains** and green energy systems

University research expertise in electric and smart transportation



MAAROUF SAAD
École de Technologie Supérieure

Power Electronics and Industrial Control Research Group (GRÉPCI)

Applications in **mobile robotics** (hardware infrastructure, trajectory generation algorithms, electrical circuits)



CATHERINE MORENCY
Polytechnique Montréal

*Canada Research Chair in the Mobility of People
Mobility Chair*

Transportation engineering: Interactions between urban travel behaviour and spatial dynamics, spatial data analysis methods applied to urban microdata



KE WU
Polytechnique Montréal

*Advanced Research Centre In Microwaves
And Space Electronics (Poly-grames)*

Electronic materials and components, **energy conversion and distribution**, wireless communication systems



ANDRÉA LODDI
Polytechnique Montréal

*Canada Excellence Research Chair
in Data Science for Real-Time Decision-Making*
Models and algorithms for quickly and efficiently processing large amounts of data from multiple sources eg. electricity market, **rail transportation logistics** and health care planning



JÉRÔME LE NY
Polytechnique Montréal

*Mobile Robotics And Autonomous
Systems Laboratory*

Autonomous systems and mobile robotics, navigation systems, design and verification of networked, distributed and embedded control systems



05

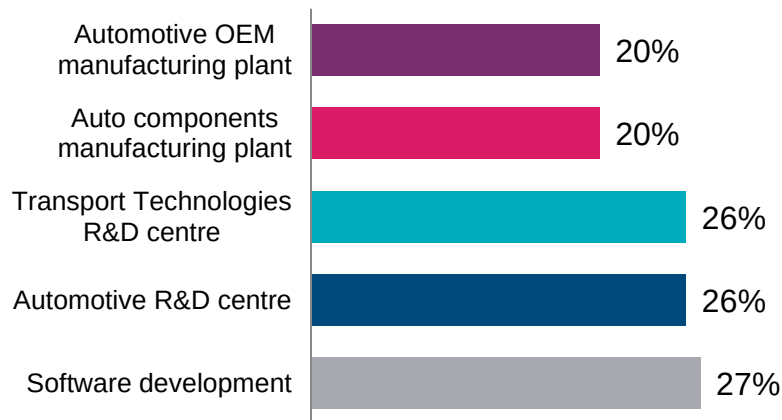
Competitive Operating Costs and Incentives



Lowest operating costs for the smart transportation industry

Greater Montréal's cost advantage in six sectors related to the smart transportation industry (%)

Compared to four other
North American metropolitan areas,* 2019



Business operating costs are lower in Greater Montréal:

- Montréal has a **24% cost advantage** over the following four North American metropolitan areas: **Austin (TX), Columbus (OH), Detroit (MI) and San Francisco (CA)**
- A **cost model developed by fDi Benchmark** to compare operating costs for different locations and types of businesses (labour, property and utility costs)

Advantageous salaries for employers

Median base annual salaries* (US\$) for six typical professions

Five major North American cities, 2021

	Montréal	Columbus (OH)	Austin (TX)	Detroit (MI)	San Francisco (CA)
Electrical Engineering Technician	\$55,818	\$65,361	\$68,289	\$69,252	\$81,163
Automotive Engineer	\$68,544	\$84,879	\$93,645	\$93,069	\$108,174
Electrical Engineer	\$79,097	\$101,370	\$111,935	\$109,907	\$128,317
Software Developer	\$82,924	\$97,426	\$106,374	\$98,498	\$138,238
Manager Manufacturing	\$86,577	\$102,887	\$109,696	\$109,514	\$145,182
R&D Manager (Technical)	\$106,169	\$128,539	\$137,439	\$136,851	\$180,446

*Salaries based on 5 years of experience; all industries combined.

Exchange rate based on the average for June 2021: 1.00 US\$= 1.2399 \$CA .

Source: Economic Research Institute Inc., November 2021.

Funding for the smart transportation industry



Partnership-building transportation electrification projects

- Intended to encourage universities, public research centres and SMEs to work together by providing funding for the development of innovative products and processes



Strategic Innovation Fund (SIF)

- Repayable or non-repayable contributions up to **50% of eligible costs for projects up to \$500M**
- All industrial and technological sectors to support innovation



ESSOR (innovative manufacturer)

- Refundable (interest-free & low interest loans) and non-refundable contributions
- Up to 15% of the capitalizable expenses



Programs that foster innovation

Scientific research and experimental development (SR&ED) tax credit program

- A **15% tax credit from the Government of Canada** and a **14% refundable tax credit from the Government of Québec**

InnoVÉÉ/PROMPT

- Calls for projects and grants for R&D collaborative projects involving at least one academic partner and one industry partner
- Subsidies that could cover up to 40% of eligible expenses and combinable with federal programs
- Examples of funded projects:
 - Development of a range extender for industrial electric vehicles
 - Development of a navigation system for electric vehicles (off-road)

INNOV-R

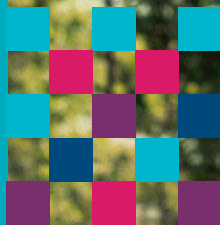
- Dedicated to projects reducing greenhouse gas emissions in Québec
- Funds up to 50% of eligible expenses for partnerships that include at least:
 - A company established in Québec
 - A university, a CCTT or a public research center
- By combining programs with other funding programs (such as NSERC, etc.), up to 90% of eligible expenditures can be covered by public funding

Other organizations that support research and innovation



06

Montréal International's Personalized, Free and Confidential Services



Montréal International, a single contact point for a series of personalized, free and confidential services



**Long-term
strategic support**



**Economic data
and communications
services**



**Government
relations facilitation**



**Incentive programs
assistance**



**Foreign workers
immigration
assistance**



**International
recruiting solutions**



Contact us



Montréal
International

Montréal International
380 Saint-Antoine Street West
Suite 8000
Montréal, Québec H2Y 3X7

t +1 514-987-8191
www.montrealinternational.com

This document is the property of Montréal International. You are authorized to reproduce this document, in whole or in part, provided that its content is not modified and that Montréal International is clearly identified as the originator of this material. You shall not, in any circumstances, use the material in a manner that could create a false or misleading impression with respect to the source of the material, including but without limitation, by means of a mark or mention that does not refer to Montréal International.

